



**AMREF INTERNATIONAL UNIVERSITY**  
**SCHOOL OF HEALTH SCIENCES**  
**DEPARTMENT OF REHABILITATION MEDICINE**  
**BACHELOR OF SCIENCE IN PHYSIOTHERAPY**  
**END OF TRIMESTER EXAMINATIONS**

**UNIT CODE: PHT 235**

**UNIT NAME: NEUROANATOMY**

**DATE: 18th APRIL 2024**

**TIME: 9AM-11AM**

**INSTRUCTIONS**

1. All students will have two (2) hours to complete the examination
2. This is an online exam, Attempt all questions as per the instruction
3. It is the student's responsibility to report any page and number missing in this paper.
4. Check that the paper is complete
5. Total number of pages is 6 including the cover.
6. Read through the paper quickly before you start.

## SECTION A: MULTIPLE CHOICE QUESTIONS (30 Marks)

- The nervous system is divided into the \_\_\_\_\_.
  - brain and spinal cord
  - sympathetic and parasympathetic systems
  - PNS & CNS
  - autonomic and somatic nervous systems
  - sensory and motor systems
- The deep groove that separates the right and left cerebral hemispheres is called the \_\_\_\_\_.
  - precentral gyrus
  - postcentral gyrus
  - central sulcus
  - longitudinal fissure
  - lateral fissure
- Gray matter differs from white matter because gray matter \_\_\_\_\_ and white matter \_\_\_\_\_.
  - is in the PNS, is in the CNS
  - is part of the sympathetic nervous system, is part of the parasympathetic nervous system
  - contains neuronal cell bodies, contains axons
  - contains neurons, contains glia
  - is in the spinal cord, is in the brain
- There are \_\_\_\_\_ ventricles in the brain.
  - 0
  - 1
  - 2
  - 4
  - 5
- The tectum is located in the \_\_\_\_\_.
  - hindbrain
  - midbrain
  - forebrain
  - spinal cord
  - Autonomic nervous system

6. The nigrostriatal pathway connects the \_\_\_\_\_ to the \_\_\_\_\_.

- A. substantia nigra ... thalamus
- B. substantia nigra ..... cortex
- C. substantia nigra.....striatum
- D. striatum.....substantia nigra
- E. striatum....cortex

7. Failure to pass the finger-to-nose test is an indication of \_\_\_\_\_.

- A. alcohol intoxication
- B. damage to the temporal lobe
- C. cerebellar damage
- D. both A. and B.
- E. both A. and C.

8. Which brain structure is located in the hindbrain ?

- A. hypothalamus
- B. cerebral cortex
- C. hippocampus
- D. substantia nigra
- E. pons

9. Dysdiadochokinesia refers to \_\_\_\_\_.

- A. inability to walk
- B. excessive movements of the appendages
- C. ignoring one side of the body opposite brain damage
- D. inability to do alternating movements
- E. loss of fear

10. Which nervous system structure is associated with control of hunger ?

- A. hypothalamus
- B. hippocampus
- C. cerebellum
- D. medulla
- E. spinal cord

11. Which of the following statements regarding nervous system development is NOT true:
- The neural tube is of ectodermal origin
  - The neural folds fuse in an anterior to posterior time gradient
  - The apices (tips) of the neural folds give rise to the neural crest
  - The cephalic end of the neural tube forms three primary vesicles
12. The fourth ventricle is the only ventricle with openings to the subarachnoid space. These are
- \_\_\_\_\_ located laterally
  - \_\_\_\_\_ located medially
13. Which of the following statements regarding CSF is NOT true:
- The CSF is secreted by the choroid plexus within all IV ventricles
  - The ionic content of CSF and blood plasma are the same
  - CSF is absorbed into the venous system through the arachnoid granulations
  - The composition of CSF is in equilibrium with brain extracellular fluids
14. The blood brain barrier results mainly from:
- The special properties of brain capillaries
  - Lack of contact between brain capillaries and spaces filled with CSF
  - The impermeable nature of the cranial meninges
  - The fact that blood vessels do not enter the brain
15. The superior sagittal sinus, the main site of venous drainage from the brain is:
- A subdural space
  - An intradural space
  - A subarachnoid space
  - An epidural space

16. Which of the following arteries are NOT included in the circle of Willis:

- a. The anterior communicating artery
- b. The anterior cerebral artery
- c. The middle cerebral artery
- d. The posterior communicating artery

17. Which of the following areas is NOT supplied by the middle cerebral artery:

- a. Frontal white matter and cortex
- b. Anterior limb of the internal capsule
- c. The putamen and outer globus pallidus
- d. Parietal white matter and cortex

18. Which of the following statements regarding the spinal cord is NOT true:

- a. The spinal cord ends at vertebrae L1-L2
- b. The filum terminale is a supporting structure comprised of dura
- c. The lumbar cistern is a continuation of the subarachnoid space
- d. The cauda equina is formed by dorsal and ventral roots

19. Which of the following statements concerning the brainstem reticular formation is NOT true?

- a. Reticular neurons form a diffuse and widespread network of connections
- b. The brainstem reticular formation is confined to the medulla and pons
- c. The reticular formation regulates general levels of activity in the brain
- d. The reticular formation has branches that ascend to the diencephalon and branches that descend to the spinal cord

20. An embolus in the middle cerebral artery has caused damage to right auditory cortex. Which of the following statements is true:

- a. Such damage will cause deafness
- b. Such damage will cause deafness only in one ear
- c. Such damage will cause problems with sound localization
- d. Such damage will cause no problems

21 Which of the following statements regarding the hypothalamus is NOT true:

- a. The hypothalamus regulates visceral and endocrine functions
- b. The mammillary bodies secrete oxytocin
- c. The hypothalamus is involved in motivated behaviour
- d. The hypothalamus is part of the diencephalon

**SECTION B (SHORT STRUCTURED QUESTIONS) (20 marks)**

22. Name the 3 germ layers that form the trilaminar embryo. (3 marks)

23. Define the following terms: (2 marks)

- a) Filum terminale
- b) Cauda equina

24. List the meningeal layers in order from the innermost to the outermost layer. (5 marks)

25. State the difference between receptive and expressive aphasia. (5 marks)

26. Name any 5 cranial nerves and state their functions. (5 marks)

**SECTION C: LONG ANSWER QUESTIONS (20 marks)**

27. Draw a diagram of a neuron and label it. (10 marks)

28. Differentiate between myelination of the CNS and the PNS (5 marks)

29. Discuss different types of meningitis diagnosis (5 marks)